Ritvik Shah

11th Grade | Fulton Science Academy, Alpharetta GA

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Education

Fulton Science Academy – Class of 2027 (GPA 4.76 – Grades 9th and 10th)

AP Computer Science Principles	(AP Score: 5/5)	AP Physics C	(2025-2026)
AP Computer Science A	(AP Score: 5/5)	AP Physics Electricity & Magnetism	(Spring 2026)
AP Precalculus	(AP Score: 5/5)	AP Statistics	(2025-2026)
AP Calculus BC	(AP Score: 5/5)	AP Microeconomics	(Fall 2025)
AP Chemistry	(AP Score: 5/5)	AP Macroeconomics	(Fall 2025)
AP Physics 1	(AP Score: 5/5)	AP English Literature and Composition	(2025-2026)

Dual Enrollment

Georgia Institute of Technology

CS 1301:	Introduction to Computing	(A+)
CS 1331:	Introduction to Object-Oriented Programming with Java	(Fall 2025)
Math 1554:	Linear Algebra	(Fall 2025)
Math 2551:	Multivariable Calculus	(Spring 2026)

Georgia State University

A Survey of US History 102 (A+)

College Board - AP Scholar with Distinction Award

SAT Super Score: 1560 (Math 800 | English 760)

Professional and Educational Certifications

Stanford University – via Coursera (August 2025 – Present)

Machine Learning Specialization (SOE-YMLS)

Supervised Machine Learning: Regression and Classification | Advanced Learning Algorithms | Unsupervised Learning, Recommenders, Reinforcement Learning

University of Michigan – via Coursera (April 2024 – August 2024)

Python Basics | Python Functions Files, and Dictionaries | Data Collection and Processing with Python

Research Publications

Selcuk Koyuncu, Ritvik Shah, and Cenap Ozel. "Topological and Numerical Approaches to Surface Transformations." *Journal of Geometry and Physics, Volume 213, July 2025, 105472.* Link

Eric Choi, Brian Chao, Irmina Choi, Audrey Chung, Anastasia Mermigas, and Ritvik Shah. "On Sub-defect of Hadamard Product of Doubly Substochastic Matrices." *Advances in Mathematics: Scientific Journal, Vol. 13, no.1, 2024,* 51–59. Link PDF

Conference Presentations

Rishi Yedavalli, and Ritvik Shah. "Development and Real-time Monitoring of an AI-Integrated UV Water Filter for School-Based Microbial Decontamination." *International Conference on Water, Sanitation and Public Health, ICWSPH-25, Nov 2025.*

Corporate Internships and Projects

Mujin, USA (1st June 2025 – Present)
Under the guidance of the Director and Co-Founder of Mujin, developed and evaluated computationally efficient approaches for optimal palletization of mixed-size, mixed-weight boxes, leveraging supervised/unsupervised learning, genetic algorithms, numerical optimization, greedy methods, and hybrid heuristics to improve both solution quality and runtime performance.

Spiralogics (1st June 2025 – 31st July 2025)
Researched and developed an AI application using RAG platform with Python Flask API, Chroma Vector DB and LlamaIndex framework to enable employees in querying the company's knowledge base using natural language.

GSynergy (1st Jun 2024 – 31st July 2024)
Developed interactive business intelligence dashboards for visualizing and analyzing sales and inventory performance. Gained practical experience in data visualization, dashboard design, and analytical tools to support business decision-making processes.

Teaching Assistantship

AP Physics 1 (August 2025 – Present)

AP Calculus and AP Precalculus (August 2024 – April 2025)

Leadership, Extra-Curriculars, Awards and Honors

First Tech Challenge (FTC) – Club Founder and Team Captain (2025 – 2026 Season, and 2024 – 2025 Season)

Pitched and secured approval for the formation of an FTC team at my school. Led a rookie team of 9 middle and high school students all the way to World Premiere Event in the club's first year; now leading a team of 14. Managed all aspects of team operations—design, budgeting, procurement, build, programming, driver practice, and meetings. Arranged professional development sessions with robotics professionals and companies from USA and Europe.

Awards:

First Tech Challenge World Premiere Event	(2024 – 2025)	Control Award
Georgia First Tech Challenge Robotics	(2024 – 2025)	Think Award
First Tech Challenge Robotics Dean's List	(2024 – 2025)	Semi-Finalist

International Robotics Honors Society (IRHS) – Founder and President since Fall 2025

Founded Georgia's first International Robotics Honor Society chapter at FSA; secured a faculty advisor, drafted bylaws, recruited 14 inaugural members, and currently leading the development of the chapter's required community service project.

Georgia Student Technology Competition – Robotics Category (2023 – 2024)

Designed and built an autonomous robot that detects plants using computer vision, travels to them, and waters them.

Awards: 1st Place Winner

American Rocketry Challenge – Air Brake System (2024 – 2025)

Led design and development of an air brake system for a model rocket, capable of mid-flight deployment for dynamically adjusting drag in real-time to precisely control the rocket's altitude. Developed the software to process sensor data, applying filtering algorithms to clean the readings and implemented a PID control loop to ensure accurate and responsive actuation of the air brakes.

Awards: National Finals Qualifier (2025)

Fulton County Science Fair – Mathematics Category (Affiliated to ISEF) (2024 – 2025)

Presented my research on modeling manta ray fin motion using non-Euclidean surface transformations to ensure spatial accuracy, and demonstrated applications of biomimicry in soft robotics, kinematic modeling and material optimization.

Computer Science Olympiad (2025 – Present, 2024 – 2025)

Faculty appointed student mentor for the 2025 – 2026 season

Georgia Student Technology Competition, Programming Challenge – 1st Place Winner

ACSL Finalist

PenApps XXVI – Hackathon at University of Pennsylvania (September 2025)

In a short period of 48 hours, conceptualized and built SPYN, a computer vision and AI based posture monitor and exercise coach that gives real-time feedback to help correct the user's posture to prevent pains and boost performance. Link

High School Model UN Club, President (August 2025 – Present), Vice President (August 2024 – May 2025)

Elected president to lead the 44-member club for the 2025-2026 season.

Proposed and organized FSA's first intra-school Model UN event for 40 middle schoolers, boosting club participation and pride. Coached students in speech, advocacy, and debate, leading to record award wins. Led preparation sessions for the team.

Awards:

Georgia Tech Model United Nations	(2025)	Verbal Commendation
Georgia State University Model United Nations	(2024)	Outstanding Delegation
Vanderbilt Model United Nations	(2024)	Outstanding Delegate

Inter School Model UN Competition, General Secretary (October 2024 – Present)

Elected General Secretary to organize and lead FSA's first inter-school Model UN event for middle schoolers in the Atlanta region, targeting over 120 participants for the October event.

Greater North Fulton Chamber – Emerging Leader's Program (August 2024 – March 2025)

Completed the Emerging Leaders Program at the Greater North Fulton Chamber of Commerce, a highly selective and prestigious initiative designed to cultivate leadership, business acumen, and civic engagement among students. Researched and presented the impact of mental health issues in first responders.

Xylem Ignite Innovation Incubator Program, Sweden (Dec 2024 – Present)

Developed a UV-based filtration system to remove bacterial contamination from school water fountains and implemented a real-time Raspberry Pi dashboard to monitor turbidity, temperature, and UV exposure. Tested 15 water samples and identified three novel bacterial strains, under the guidance of a global expert in water filtration.

FloodSense – Frontend Developer and Data Scientist (2025)

Designed, built, and deployed the web 3.0 frontend of FloodSenseAI.com, which is an AI application that predicts flood risk by integrating real-time weather data for precise, location-specific assessments. It combines instant rule-based analysis with a transformer model that interprets natural language scenarios. Key features include historical comparisons, scenario forecasting, and interactive visualizations to support proactive planning and disaster response.

National Honors Society – Member since April 2025

National Science Honors Society – Member since April 2025

Community Service and Volunteering

Founder, Plants for Purpose (Jan 2022 – Present)

Founded this organization, which propagates and sells plants to raise funds for pediatric cancer research and education for underprivileged children in India, while also promoting environmental stewardship, and social responsibility.
https://www.plantsforpurpose.com/

Presidential Volunteer service GOLD award (2024)